



**Manufacturers of Agricultural Machinery**

# **Hi-Spec Mixmax Diet Feeder**

**Operators**

**Manual**

**2012**

**Models:**

**10, 14, 16, 18, 24**

*rev - mm104*

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*Parts are subject to change at any time, without prior or direct notice to the customer. The contents of this manual can as well be changed without prior notice. For information about adjustment, maintenance or repair, which are not mentioned in this manual, you are advised to consult the technical support of your supplier.*

*This manual has been made with all possible effort, but Hi-Spec Engineering and its suppliers cannot be responsible for possible mistakes in this manual, nor for the consequences.*

# Introduction

## **Congratulations on your purchase of MixMax Diet Feeder.**

### **Please Read the Following Manual Before Using Machine.**

The way you care for and maintain this machine will decide its future performance. This manual has been carefully written to help you maintain the condition of your machine. Read this manual carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or machine damage.

MixMax Diet Feeders have been designed and manufactured in compliance with the following directives and standards;

*Machinery Directive 2006/42/EEC*

Harmonized standards ;

*EN ISO 12100-1:2003, Safety of machinery Part 1: Basic terminology, methodology*

*EN ISO 12100-2:2003, Safety of machinery Part 2: Technical principles*

*EN ISO 4254-1:2005, Agricultural machinery -- Safety -- Part 1: General requirements*

*EN ISO 14121-1:2007, Safety of Machinery – Principle of Risk Assessment*

*BS EN 703:2004+A1:2009, Agricultural machinery – Silage loading, mixing and distributing machines - safety*

This manual should be kept within the vicinity of the machine at all times. This manual should be considered a permanent part of your machine and should remain with the machine should you decide to sell it.

Warranty is provided as a part of Hi-Spec Engineering's support program for customers who operate and maintain this machine and equipment as described in this manual. This warranty provides you the assurance that Hi-Spec Engineering will back its machines where defects appear within the warranty period. Should the machine be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and improvements may be denied.

All information, illustrations, and specifications in this manual are based on the latest product information available at the time of publication.

It is the policy of Hi-Spec Engineering to improve its products and designs whenever it is practical and possible to do so. We reserve the right to make changes or improvements at any time without incurring any obligation to make such changes on products sold previously

## **Thank you for choosing Hi-Spec Engineering**

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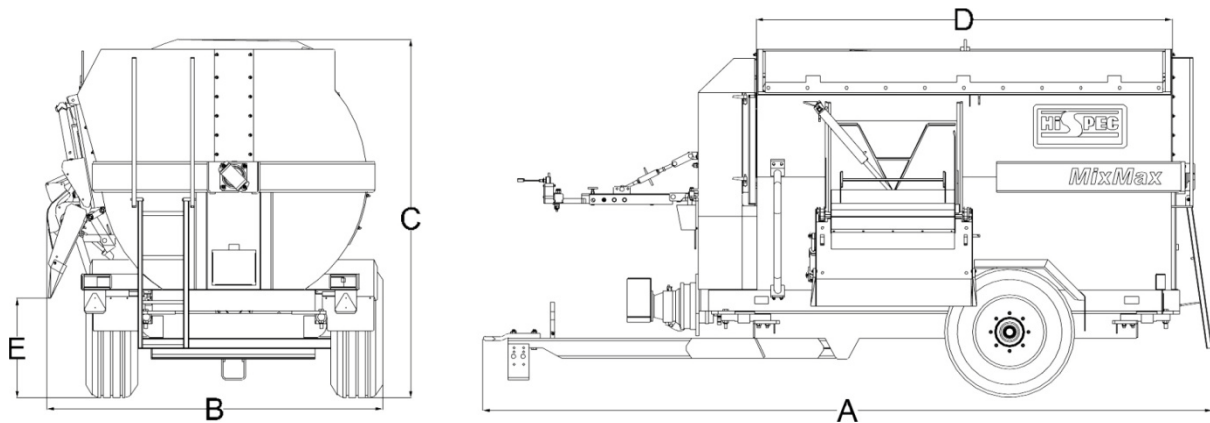
## Designated Use of Machine

The MixMax Diet Feeder is exclusively designed to mix and dispense feed in a controlled environment e.g. level, stable ground such as a cattle shed, using low power requirements and low maintenance costs. Ensure the machine is level to get the best results while mixing.

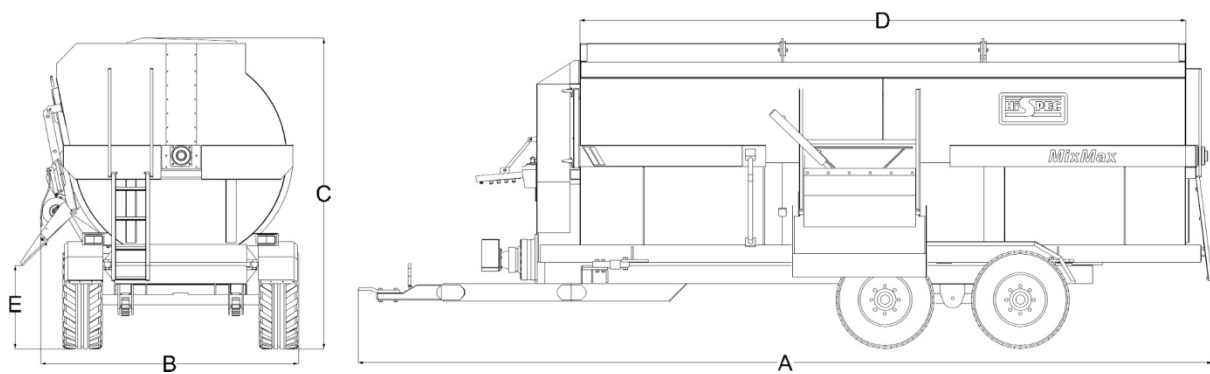
Hi-Spec Engineering will not be held responsible for any loss or damage resulting from machine applications other than those specified above. Any other use the machine may be put to is entirely at the owners/operators risk. The Designated use of a MixMax Diet Feeder includes that the operating, maintenance, and repair instructions given by the manufacturer will be strictly fulfilled. Designated use means operating the Diet Feeder is exclusively for persons familiar with the machine and fully aware of the associated risks involved in operating it.

By any alteration of safety equipment, the Declaration of Conformity, as well as the CE sign on machine loses its validity.

## Technical Specifications and Dimensions



<i>Single Axle</i>	Capacity	Overall Length (A)	Overall Width (B)	Overall Height (C)	Length of Chamber (D)	Feedout Height (E)	Unladen Weight
<b>MixMax10</b>	10m <sup>3</sup>	5325 17'6"	2450 8'	2630 8'8"	3050 10'	995 3'3"	4720kg
<b>MixMax14</b>	14m <sup>3</sup>	6250 20'6"	2450 8'	2630 8'8"	4050 13'3"	995 3'3"	5270kg
<b>MixMax16</b>	16m <sup>3</sup>	6280 20'7"	2550 8'4"	2945 9'8"	4050 13'3"	995 3'3"	5990kg
<b>MixMax18</b>	18m <sup>3</sup>	7050 23'2"	2550 8'4"	2945 9'8"	4560 15'	995 3'3"	6375kg



	Capacity	Overall Length (A)	Overall Width (B)	Overall Height (C)	Length of Chamber (D)	Feedout Height (E)	Unladen Weight
<b>MixMax18</b>	18m <sup>3</sup>	7050 23'2"	2550 8'4"	2945 9'8"	4560 15'	995 3'3"	6375kg
<b>MixMax24</b>	24m <sup>3</sup>	8390 27'5"	2580 8'6"	3100 10'2"	6025 19'9"	1165 3'10"	9400kg

## Safety

*The Hi-Spec MixMax diet feeder has been designed with many safety features built in to its design but ultimately, safe operation and maintenance is the responsibility of the operator.*

### Recognize safety information.



This is a safety alert symbol. When you see this symbol on your machine or in this manual be alert to the potential for personal injury.

Follow the recommended guidelines for safe operating practice:

Understand signal words: - On machine safety signs, signal words give the level of the hazard.

## Danger

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury

## Warning

Indicates a potentially more hazardous situation which, if not avoided, could result in death or serious injury

## Caution

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury

You will find these signs located near specific hazards on your machinery.

Please pay attention to these signs for your own safety

Safety signs should be maintained and replaced when necessary. They can often become dirty, torn, or unreadable due to dirt and wear and tear.

If you need a replacement sign or have lost your user manual, please contact your Hi-Spec authorized dealer or Hi-Spec Engineering directly and we would be happy to issue you with a replacement.



## General Safety

- Keep a first-aid kit and a fire extinguisher close by at all times, if possible, on your tractor with this operator instruction manual.
- Have an emergency plan.
- Keep all emergency numbers close by; write them into your manual.
- Inspect your machine carefully each time before use; this will only take a minute.
- Always climb the ladder and check inside the feeder before starting or filling it, to make certain it is empty.
- Shut off vehicle when leaving unattended.
- Children should never be in the area when your MixMax Diet Feeder is in operation.
- Using a MixMax Diet feeder is a one-man operation; therefore there should be no other person(s) in the vicinity of the machine while in use.
- Remember that the first step to avoiding danger is to recognize the hazards.

## Safety Checklist

- ✓ Always disconnect all power sources before carrying out any adjustment or maintenance.
- ✓ Always check inside the mixer to make sure it is empty
- ✓ Always check around the feeder making sure everything is in order, this will only take a minute.
- ✓ Provide training to new users. Study this manual. Like all farm machinery, the MixMax feeder is a potentially dangerous machine when under the control of untrained personnel.
- ✓ Exercise extreme care when loading feed and additive into the mixer
- ✓ Always ensure guards and other safety devices are kept in good working order. Replace if necessary
- ✓ Keep clear of all moving parts.
- ✓ Always connect the shear bolt end of the PTO shaft to the tractor
- ✓ Always use shearbolts recommended to you by Hi-Spec Engineering.
- ✓ Always keep all hydraulic hoses and electric cables clear from PTO shaft
- ✓ Always apply handbrake before unhitching and park the Feeder in a level area.
- ✓ Always use ladder for mixing inspection point, DO NOT climb up the side of the Feeder. Remember to fold up ladder after each inspection

- ✓ Always take extra precautions when using the machine on hilly or sloping ground.
- X Never permit young persons or spectators to operate PTO driven equipment or stand anywhere close by when the MixMax feeder is in operation.
- X Never permit untrained personnel to operate the Feeder without reading this manual and or receiving training
- X Never operate machine without having all guards in place, they are there for your safety and protection against serious injury and death
- X Never remove guards while there is still power going into the machine, all power must be off!
- X Never put your hands past the guard in front of the teaser roller while there is power going into the machine, turn the machine off and then assess the situation.
- X Never enter the machine while in operation. The mixing chamber is extremely dangerous, there is a risk of fatal injury if you enter the mixing chamber while components are moving, never under any circumstance enter the mixing chamber. If you need to enter the mixing chamber for maintenance, please see instructions in the maintenance section..
- X Never wear loose clothing when operating machinery, if standing too close your clothing can pull you into the machine. This is one of the most common causes of machinery users being dragged into moving parts causing serious injury or death
- X Never operate the Feeder if you think there could be large stones or foreign objects inside, they could cause serious damage to your machine
- X Never leave machine running when unattended.
- X If the machine should become blocked with a stone or foreign object, DO NOT attempt to free the object while the machine is running.
- X Do not climb into the machine using the ladder or control box at the front or rear of the machine
- X Do not stand on the ladder whilst the feeder is in transit, the vertical feeder should never be used for the transport of people, animals or objects.
- X

## Description of Safety Warnings and Instructions

The following is a list of safety signs and warning labels on the MixMax Diet Feeder. Look carefully and make sure you know where on the Mix Max they are positioned and what they mean. It is important you are fully aware of the areas of risk on your machine.

Feed should be loaded into the machine from this side only, i.e. the side with this decal.

**FILL FROM THIS SIDE ONLY**

Keep a safe distance from the revolving rotor while machine is in operation.

**DANGER STAND CLEAR  
OF REVOLVING ROTOR**

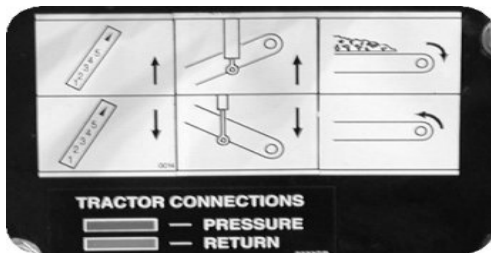
MixMax Feeder Operating Instructions.



General danger sign, danger of rotating parts and foreign objects. Keep clear of machine while working.

**DANGER**

Follow these tractor hydraulic connection diagrams. Remember Red for Pressure and Green for return!



The maximum PTO speed for mixing is 400 R.P.M.



This safety sign is to remind the operator to disengage the PTO before turning



## PTO Shaft Safety

The PTO shaft is a vital link in driving the machine. It is also a very dangerous piece of equipment, therefore it is important to follow the manufacturer's guidelines on maintenance and repair. These guidelines are fixed to the PTO when new. They should be removed, read carefully and then stored with this instruction manual for future reference. If the guidelines are missing from the PTO Shaft please contact your Hi-Spec dealer for another copy.

The irregular shape and connection joints of a turning shaft can cause serious injury. The rotational force of the shaft is the main hazard.

Do not wear loose fitting clothing or articles such as jewellery that might get caught in a turning PTO. The rotation of the PTO is 540 rpm when mixing. Accidents can happen very fast therefore keep a safe distance from the shaft when it is in use.



PTO Shafts account for most of tractor related fatalities.

**Make sure the shaft is guarded.  
Replace the guards when they are  
Damaged or missing.  
Never use the machine with  
Damaged or missing guards  
In an emergency situation, take the PTO  
Out of gear, stop the engine and set the brake.**



# Getting Started

## Tractor Requirements

The horsepower needed to power a Diet Feeder depends on the size of the machine;

MixMax 10	MixMax 14	MixMax 16	MixMax 18	MixMax 24
60 hp	70 hp	85 hp	100 hp	125 hp

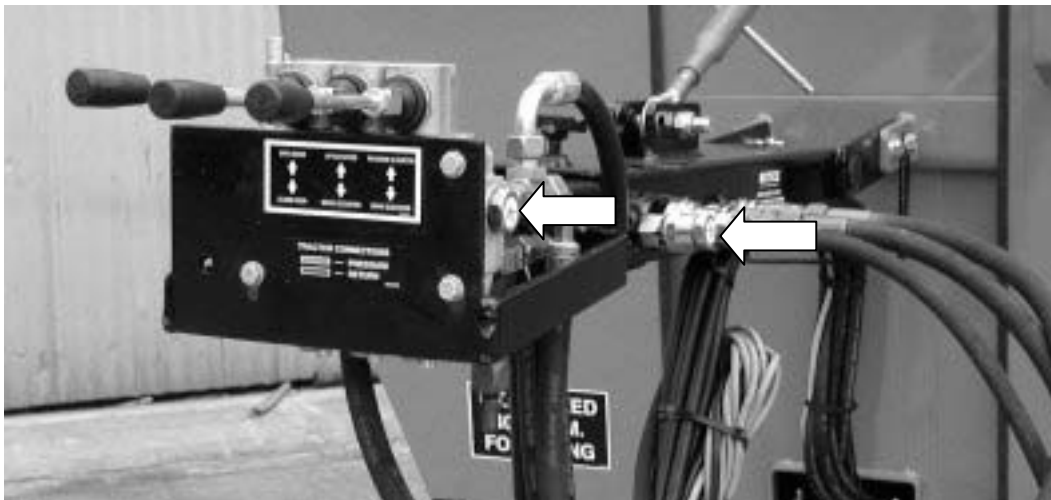
## Hydraulic Requirements

On Feeders with a Spool valve fitted:

One single acting valve is required. Attach the pressure pipe (RED) to the tractor valve and the return pipe (GREEN) to the tractor reservoir.

On Feeders with no Spool Valve Fitted:

Two double acting valves are required.



**!! WARNING!!**

**On Feeders with a Spool Valve fitted**

Before connecting the hydraulic system it is imperative to ascertain the type of hydraulic system on your tractor (**open or closed centre**)

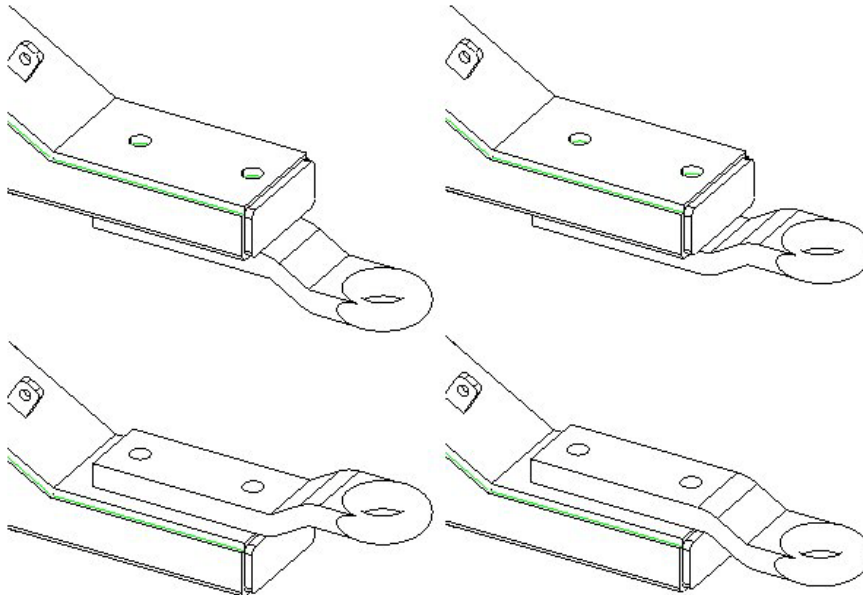
With an **open centre** system insert valve marked **X1** into the side of the Spool Valve

With a **closed centre** system insert valve marked **X2** into the side of the Spool Valve

## Connecting Feeder to Tractor

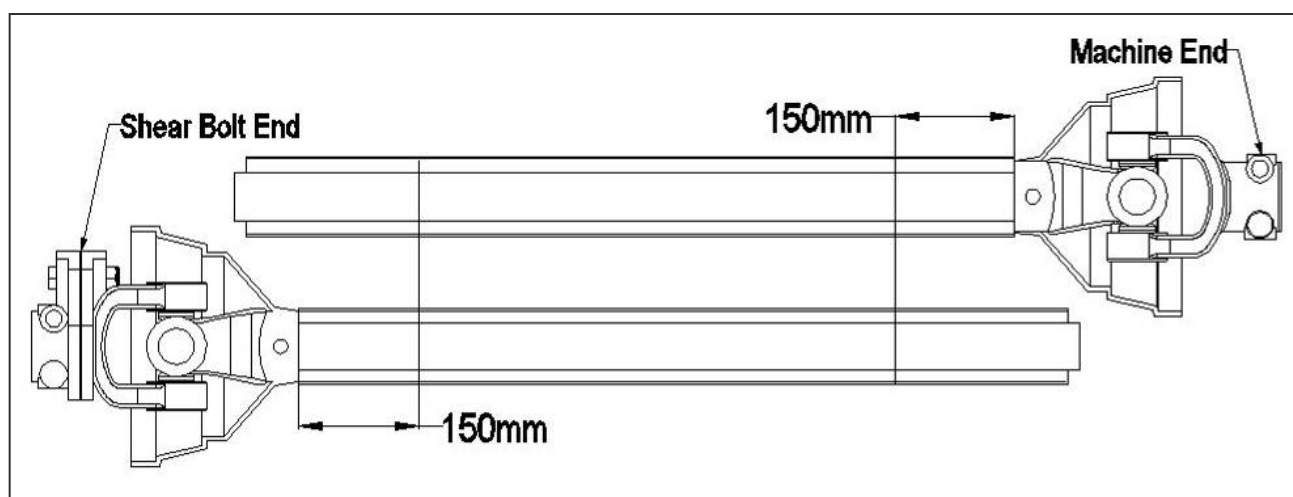
1. Use a pickup hitch or a short drawbar.
2. Have the Feeder on a level area.
3. Adjust the height of the bolt on hitch to ensure the machine is level when attached to tractor.

The following diagram shows four different height options



## Fitting PTO Shaft

- Turn the tractor to full lock to either the left or right to get the shortest point of the PTO shaft.
- Slide the PTO apart and fit the half with the shear bolt to the tractor and the other end to the machine.
- Lift the two parts of the PTO shaft up so that they are level with each other.
- Mark 150 mm (6") back from each other as shown in the diagram below.
- Cut off the excess profile.





## Road Transportation

Before bringing your machine onto a public road, it is important to check thoroughly that the machine is following all of the appropriate guidelines.

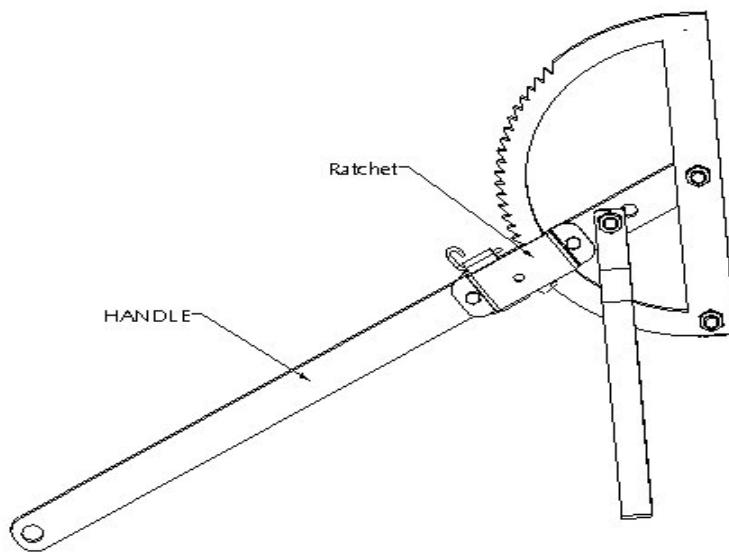
- Ensure brakes are connected and working correctly
- Ensure lights are connected and working correctly
- Ensure PTO is disengaged and electronic readout is switched off
- Observe local maximum road speeds for this type of machine
- **Hi-Spec Engineering strongly recommend extreme care to be taken by the operator when travelling on rough roads with a loaded Machine as shock loads will damage the weighbars. Owners and/or operators do so at their own risk.**
- The operator must ensure that any other regulations regarding road use are adhered to.
- Extreme care must be taken when negotiating acute bends with high speed tractors.

## Emergency Breakaway Handbrake

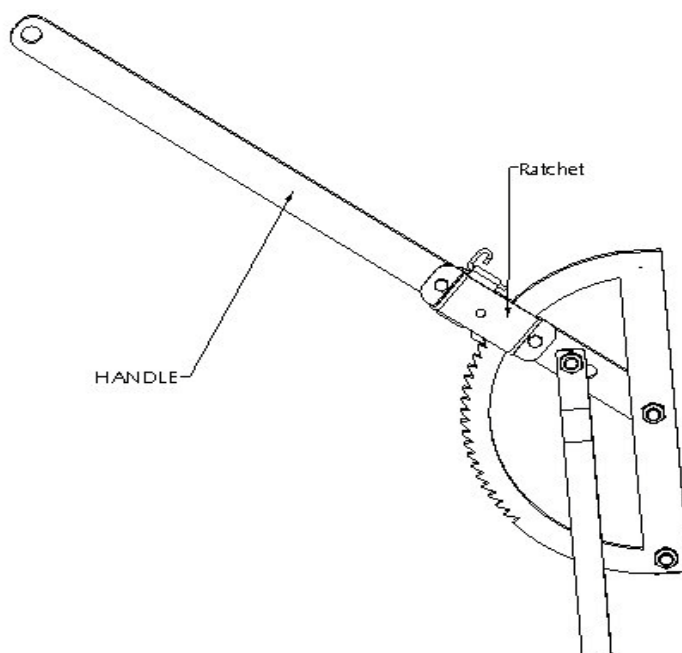
The emergency breakaway handbrake should be connected to the tractor every time the diet feeder is been used. It should be done using the wire rope provided. The wire rope should be attached to a solid part of the tractor like the top link pin and not to a panel on the tractor.

The wire rope should be tight enough so it will work effectively if the diet feeder became detached from the tractor but loose enough that the handbrake is not been applied during normal operation.

Handbrake in the off position



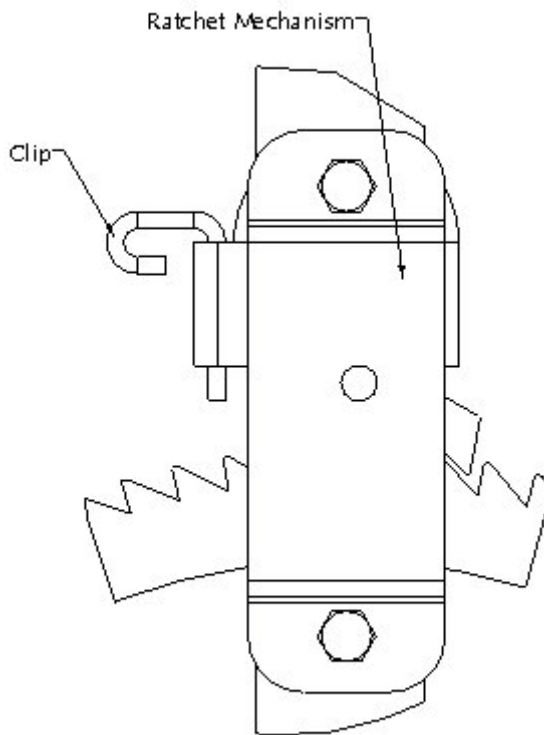
Handbrake in the on position



## Disengaging the Emergency breakaway handbrake

It is disengaged by following the steps below:

- Make sure the clip in front of the ratchet is facing forward or turned away from the gearbox on the feeder.
- If the clip is turned towards the gearbox the ratchet mechanism will not release.



- Push the handle towards the feeder so the ratchet becomes tight against the teeth that hold it in place.
- Pull the handle away from the feeder so the ratchet will disconnect itself from the teeth.
- Push the handle back to its original off position.

**WARNING:** It is important to check that the handbrake be fully released when the tanker is in use. If the brake is left half applied it will cause damage to the brakes on the diet feeder.

# Operating Instructions

## Attaching your MixMax Feeder

1. Before using your machine, always walk around it, making sure everything is in order.
2. Attach the MixMax diet feeder to a the tractor using a pick-up hitch or short draw bar
3. Connect **all** Hydraulic pipes to the tractor (inc. Brake pipe).
4. Connect the lights plug to the tractor power supply
5. Connect the weigher plug to the tractor power supply
6. Inspect the mixing chamber, making sure it is empty; remember to put the ladder back into transport position once you have finished with it.
7. When you are satisfied everything is as it should be, connect the PTO to tractor, secure the PTO guard at both ends using the safety chains provided.
8. Ensure the shearbolt is always towards the tractor

## Starting a New Mix

1. Adjust the Digi-star weigher box to the required setting (see your Digi-star installation manual). Do not attempt to adjust your Digi-star weigher system without referring to the Digi-star installation manual, which has been supplied to you with your machine.
2. Ensure Discharge door is Closed
3. Engage PTO drive and run as slow as possible without stalling the tractor. When mixing better blending will be achieved if PTO speed does not exceed 400 r.p.m. on PTO shaft.
4. Only fill the mixing chamber from the left-hand side of the MixMax diet feeder and always ensure that the machine is reasonably level before you commence filling.

**Complete Diet;** With the machine running, add approximately ½ ton of forage then add the required amount of concentrates and fill with the remainder of the forage or alternatively, with the machine stopped, fill the required amount of concentrate, add approximately ½ ton of forage and start the machine. Then with machine running, fill with the remainder of the forage.

**Concentrate Mixing;** With the machine running, add approximately ½ ton of the first ingredient. Next add all the smaller ingredients (minerals, etc) to the Feeder then continue filling the machine with the remainder of the ingredients. If molasses is being used in the concentrate mix, it is important to have the machine level. Molasses should be added first, then add a bucket full of the next ingredient. Be careful not to add the ingredient too quickly, this may cause the mixture to become lumpy.

**Maximum capacity when mixing concentrate;**

Model 10: 4 tons

Model 14: 5 tons

Model 16: 6 tons

Model 18: 7 tons

5. If a tractor is not available to operate the feeder, filling can take place first and mixing at a later stage.
6. In order to obtain maximum mixing/blending Hi Spec recommend not to fill the machine in excess of 90% of its volume capacity

## Ladder Operation

- The ladder at the rear of the Feeder is provided to assist the operator to view the load while it is mixing and to assist the operator as to when the mixing is complete.
- When not in use the ladder should always be folded into the transport position to avoid unnecessary damage.
- No person should use the ladder while the Feeder is being loaded.



Ladder in Transport Position



Ladder in Work Position

## Loading Instructions

Only fill the mixing chamber from the left-hand side of the MixMax diet feeder and always ensure that the machine is reasonably level before you commence filling.

- When the loading of ingredients is finished inspect the load for quality of chopping and or mixing before discharging the feed mix.
- When loading is finished and you are satisfied with the quality of the chopping and mixing disengage the PTO and proceed to the feeding area.
- Make sure all packaging, i.e. bale wrap, twine and netting are completely removed before loading your machine
- Standing level with or above the machine in order to load manually is not permitted, loading should only be carried out with suitable equipment
- When loading the machine, make sure the loader/teleporter is clear of all power lines
- Ensure that there are no persons standing in the vicinity of the machine when loading



# Feedout Instructions

## Feeding with Chute Discharge

1. **Standard chute:** the discharge height must be set to the desired height while the door is open.
2. **Hydraulic operated chute:** the discharge height is set independent of the door
3. When discharging feed from the machine, the following procedure should be followed:-
  - 1) Disengage PTO
  - 2) Open Discharge Door
  - 3) Set discharge height.
  - 4) Make sure Teaser Roller is rotating in the correct Direction
  - 5) Engage PTO(Maximum rpm of PTO is 540)
4. Remember that the rate of the feed is controlled by the how widely opened the discharge door is and also the ground speed of the tractor.
5. When the load has been dispensed, disengage PTO close the feedout door, the standard chute will then return automatically to the transport position. Use the control valve to fold the hydraulic chute if fitted.

**Failure to observe the above sequence will result in severe damage to the machine.**

### NOTE:

When feeding out of the machine, the discharge door opening should be wide enough not to force feed into the teaser roller. If feed is forced into the teaser roller it will cause damage to the machine.

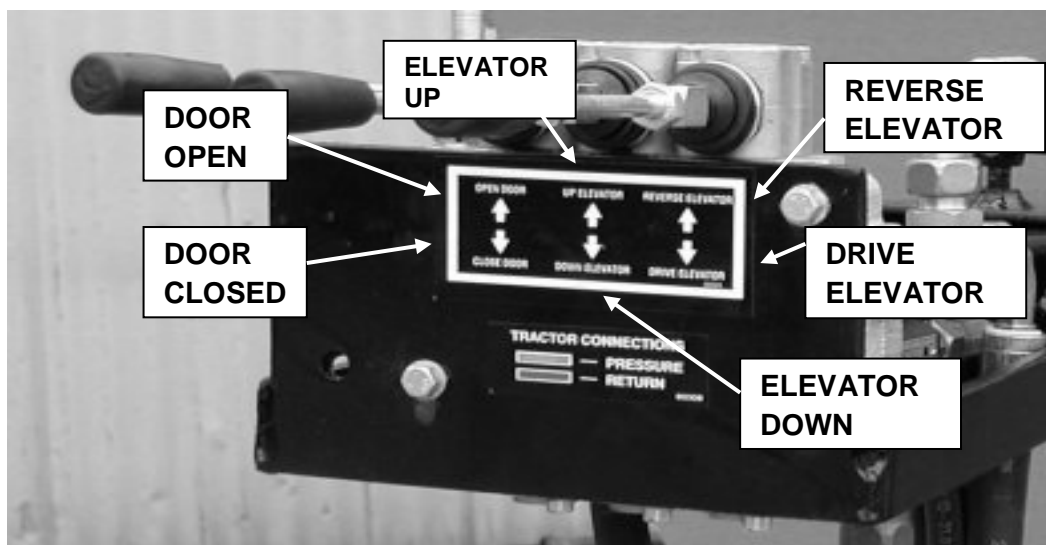


## Feeding with an Elevator Fitted

1. Open the discharge door to the desired height
2. Adjust the elevator to the required height and speed (Note that the speed of the elevator can be controlled by the flow control valve mounted at the spool valves or close to the elevator -see diagram below).
3. Start the elevator.
4. Engage the PTO.
5. When the feed has been discharged, turn off the PTO, close the feed-out door, and fold the elevator back into the transport position.

On Tractors fitted with a two-speed PTO, the 1000 R.P.M speed can be used when the load in the machine is less than 1 ½ tons. This speeds up the complete emptying of the feeder.

**Never use the 1000 R.P.M option when the load exceeds 1 ½ tons or for mixing.**



### REMEMBER

- Always Disengage the PTO when turning.

Ensure no large stones or foreign objects are loaded into the mixing chamber, they could damage your machine and cause injury if they become dislodged and fly from the machine.

# Maintenance

In order to maintain your machine in peak working order, it is necessary to carry out routine maintenance. The following chapter will give you details of the procedures and frequency required.

## Correct Maintenance and Inspection Procedures:

- Learn how to service your machine correctly.
- Follow the correct maintenance and inspection procedures shown in this manual.
- Inspect machine daily before starting.
- Walk around machine checking general appearance.
- Check for loose or missing parts.
- ALWAYS disengage PTO before greasing and making any adjustments
- Make sure the machine is parked on a level surface before starting.
- NEVER operate machine without safety guards in position.
- CAUTION During operation, some parts of the hydraulic system can become hot; allow the machine to cool down before beginning inspection or maintenance.

If there is a problem with your machine, repair it before operating or contact your authorized Dealer or Hi-Spec Engineering.

## Maintenance Safety

Extreme caution must be taken when performing maintenance or repairs to the MixMax diet feeder. The machine must be disconnected from all power sources (ie. tractor) before any maintenance or repair work is carried out.

**It is the responsibility of the operator to ensure that a safe system of work is in place before any maintenance or repair procedures.**

The mixing chamber is a particular hazard. It contains a large number of knives for cutting fibres in the diet mix. The floor of the chamber is curved and is extremely slippery. Before performing any work within the chamber the operator must cover the cutting surface of all knives and ensure they have a good base to provide a solid footing.

## Recommended Interval Maintenance

The following is a maintenance list recommended for your machine by Hi-Spec Engineering to ensure your machine is kept in peak condition.

### After the first 25 hours:

- Check all nuts for tightness.
- Check tyre pressure, the recommended tyre pressures are as follows (pressure is in bars)

Wheel size	40 x 14.5	16.5 x 22.5	37 x 13	80 x14.5
Pressure	5.0	5.5	6.0	5.0

Check tightness of road wheel nuts after 25 hours and every 100 hours there after

### Every 10 hours:

- Grease points (2) on PTO shaft, also pull apart, and grease sliding tube.

### Every 50 hours:

- Oil drive chain on the main drive system
- Check oil container on automatic chain oiler (optional extra) and top up with **SAE 10**
- Oil door hinges and fasteners
- Check chains on elevator. Replace if excessively worn.

### Every 100 hours:

- Grease points on main drive system; all these are piped to the central greasing point
- Grease point at rear of machine, under ladder
- Grease slides for Feed-out door
- Grease points (4) on hydraulic roller feed-out
- Grease points (4) on hydraulic elevator
- Grease points on hydraulic elevator ram
- Grease points (2) on the hydraulic door ram.
- Remove the hubcap and fill with grease.
- Check the main Drive chains for tension and if required, adjust the spring-loaded tensioner (chains should not be sagging under the load).
- Check knives and starter if necessary

- Check tyre pressure
- Check elevator chain for slackness and adjust if necessary
- Check tightness of gearbox mounting bolts

## Recommended Yearly Maintenance

- Check hydraulic pipes for any frays or fractures and replace if necessary
- Check wheel bearings for slackness and adjust if required
- Remove road wheel hub caps and fill with grease
- Check automatic chain oiler brushes and replace if necessary
- Ensure the weighbar bolts are properly torqued i.e.

400Nm - M20 x 100 Bolts      40Nm - M24 x 130 Bolts

**The large bolts (M24) should never be over tightened, as this will cause the weigher to read inaccurately**

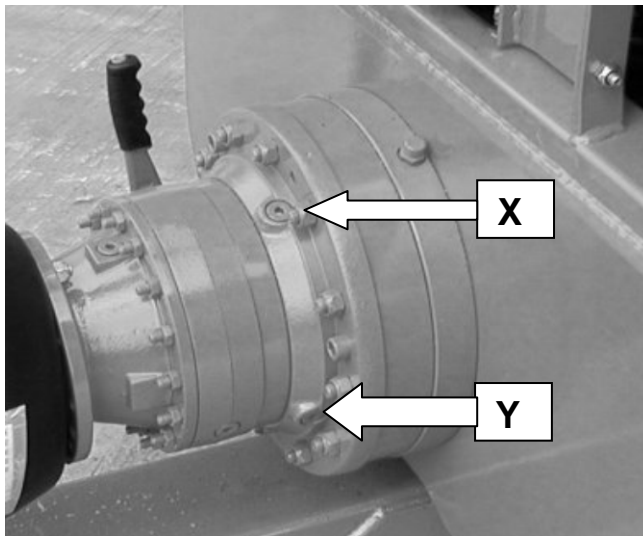
- Check rotor seals and adjust if required.
- Check paddle rubbers, they may need to be replaced

## Front Gearbox Maintenance

- After the first 25 hours, check that the fixing bolts are properly tightened and that everything is correctly aligned.
- Every 200 hours, the oil level should be checked and lubricant added if required.
- If the machine should be idle for longer than two months for any reason, it is necessary to rotate the gear unit every 2/3 weeks to ensure that the bearings and gears are coated in lubricant, protecting them from corrosion. For longer periods out of service we recommend that the gear unit be completely filled with oil.

### Changing the Oil:

1. Remove Caps X and Y
2. Pour lubricant into X.
3. Continue to pour until lubricant begins to flow from Y.
4. Replace both X and Y.



## Lubrication

The first oil change should be carried out after a minimum of 50 or a maximum of 100 working hours.

At the first oil change, we recommend that the gear case be washed out with diesel to flush out any microscopic debris.

The breather and magnetic drain pugs should be cleaned at every oil change. Other oil changes should be made every 2500 working hours and at least once a year.

If in doubt, contact Hi-Spec Engineering or your Hi Spec Dealer.

### Lubricant Selection According to Ambient Temperatures

	-20°C - +5°C	+5°C - +5°C	+40°C - +65°C	-30°C - +65°C
	IV95 MIN	IV95 MIN	IV95 min	IV95 min
<b>ISO 3448</b>	VG100	VG150	VG320	VG150-220
<b>BP</b>	ENERGOL GRX	ENERGOL GRXP150	ENERGOL GRXP320	ENERGOL SGXP220
<b>CASTROL</b>	ALPHA SP100	ALPHA SP150	ALPHA SP320	ALPHA SN150-220
<b>CENTURY</b>	CENTILUBE D76	CENTILUBE E76	CENTILUBE G76	SGE – SGF
<b>CHEVRON</b>	GEAR COMP. EP100	GEAR COMP. EP150	GEAR COMP. EP320	TEGRA VG220
<b>ELF</b>	REDUCTELF SP100	REDUCTELF SP150	REDUCTELF SP320	SYNTERM P125-270
<b>ESSO</b>	SPARTAN EP100	SPARTAN EP150	SPARTAN EP320	GLYCOLUBE 150-220
<b>FINA</b>	GIRAN 100	GIRAN 150	GIRAN 320	GIRAN S150-220
<b>GULF</b>	EP/HD 100	EP/HD 150	EP/HD 320	GULF SYNTHETIC GEARLUBE
<b>MOBIL</b>	MOBILGEAR 627	MONILGEAR 629	MOBILGEAR 632	GLYGOYLE 150-220
<b>SHELL</b>	OMALA OIL 100	OMALA OIL 150	OMALA OIL 320	TIVELLA OIL SA
<b>TOTAL</b>	CARTER EP 100	CARTAR EP150	CATER EP/HT150-220	CARTER HT150-220

## Elevator Maintenance

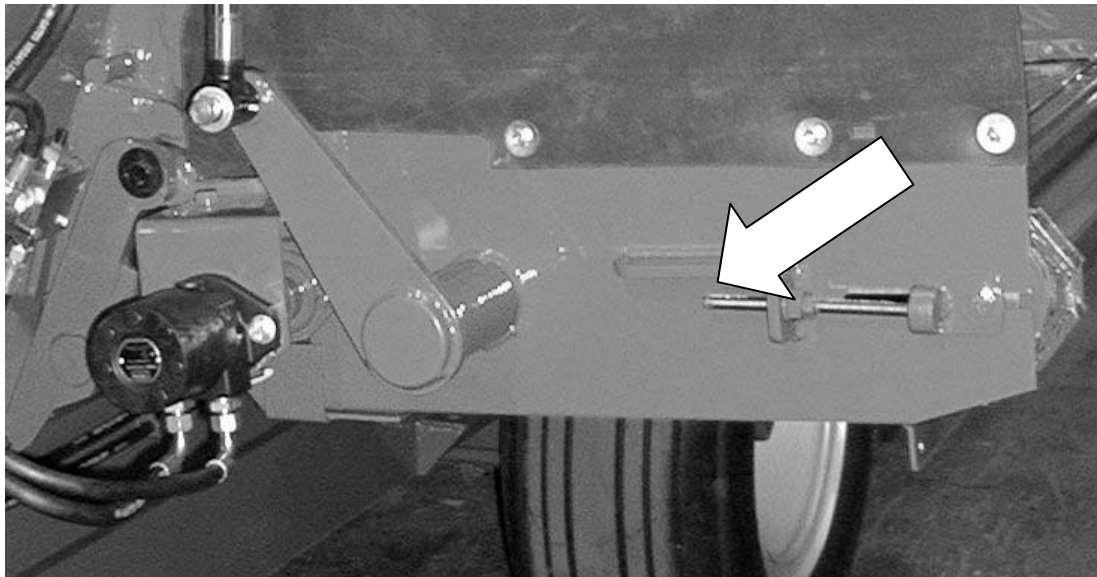
### Adjustment of slat and chain elevators:

Slat and chain type elevators need adjustment if the chains become excessively loose due to normal wear.

Adjustment is achieved by tightening or loosening the adjusters that are located on the side of the elevator. Adjust a small amount at a time, (¼ turn adjustment each time is recommended). Adjust the adjusters so that the chain is firm but there is still a small amount of play when the chain is pulled up by hand.

Replacement chains should be fitted when excess wear has occurred to insure the smooth running of your MixMax Diet Feeder

**CAUTION: DO NOT OVER TIGHTEN CHAIN AS BREAKAGE MAY OCCUR.**



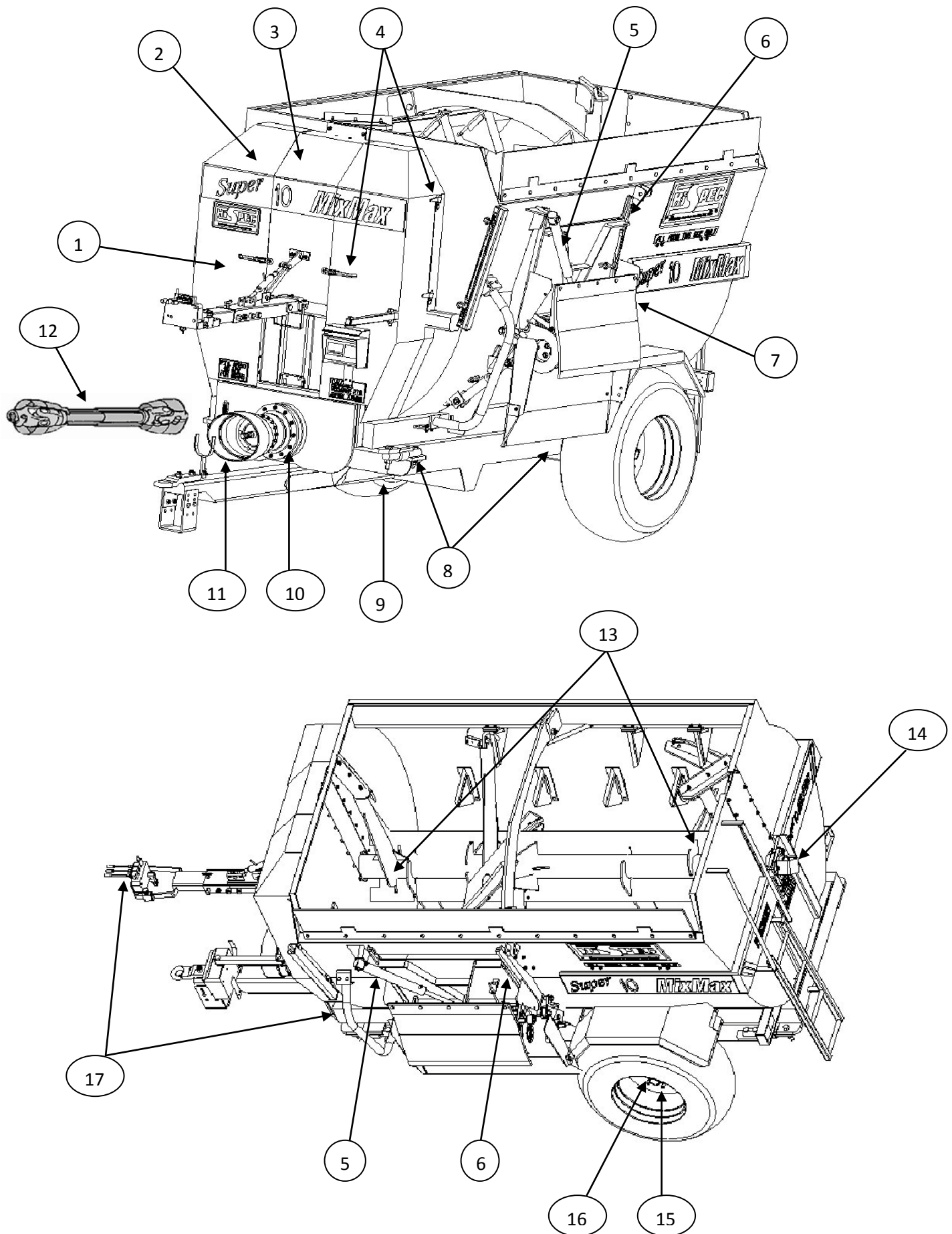
## Greasing and Maintenance Location Points

Number:	Machine Part
1	Central Greasing Point
2	Main Drive Chain
3	Automatic Chain Oiler
4	Door Hinges and Fasteners
5	Hydraulic Door Ram
6	Slides for Feed-out Door
7	Roller Mounting Pivot
8	Weighbar Bolts
9	Weighbar Bolts
10	Gearbox
11	Gearbox- PTO Shaft Connection
12	Grease Points on PTO Shaft
13	Rotor Seals
14	Grease Point at Rear of Machine
15	Road Wheel Nuts
16	Hub Cap
17	Hydraulic Levers & Pipes

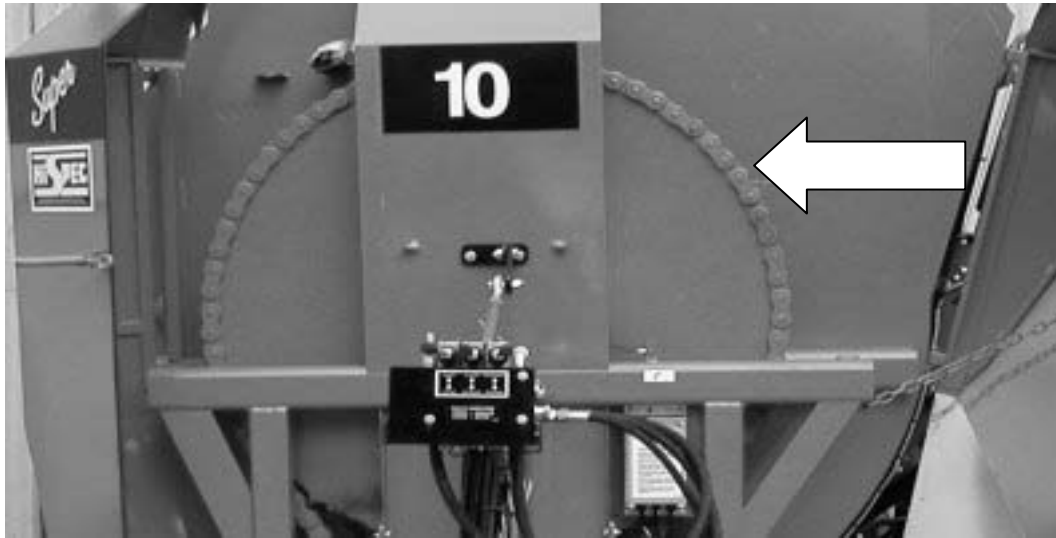
This symbol is found on each greasing point on the Diet Feeder



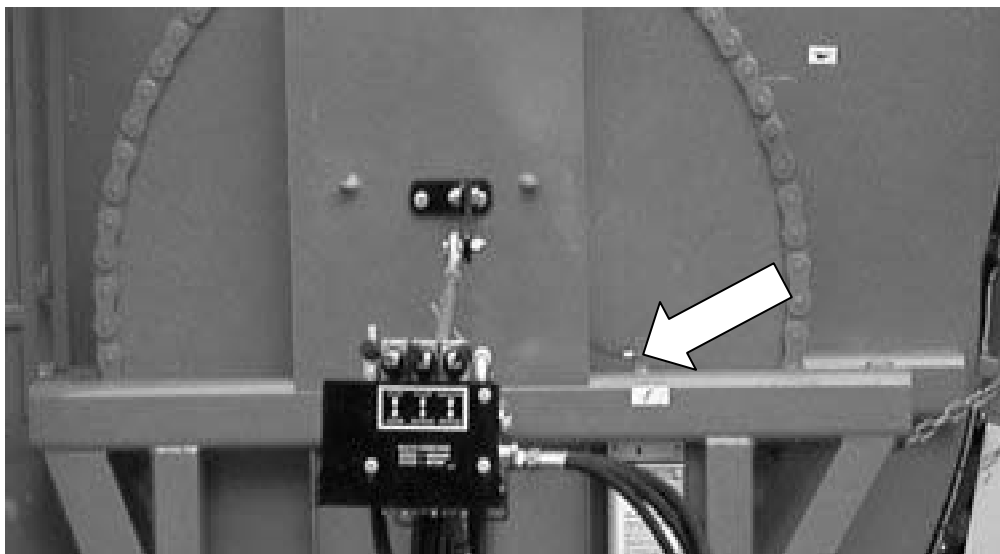




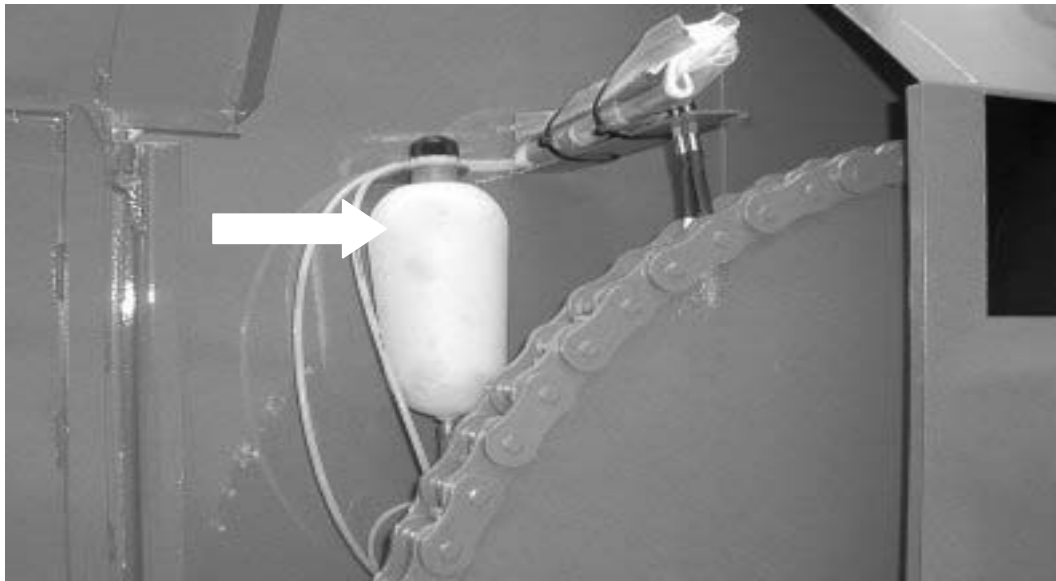
## Greasing and maintenance location points



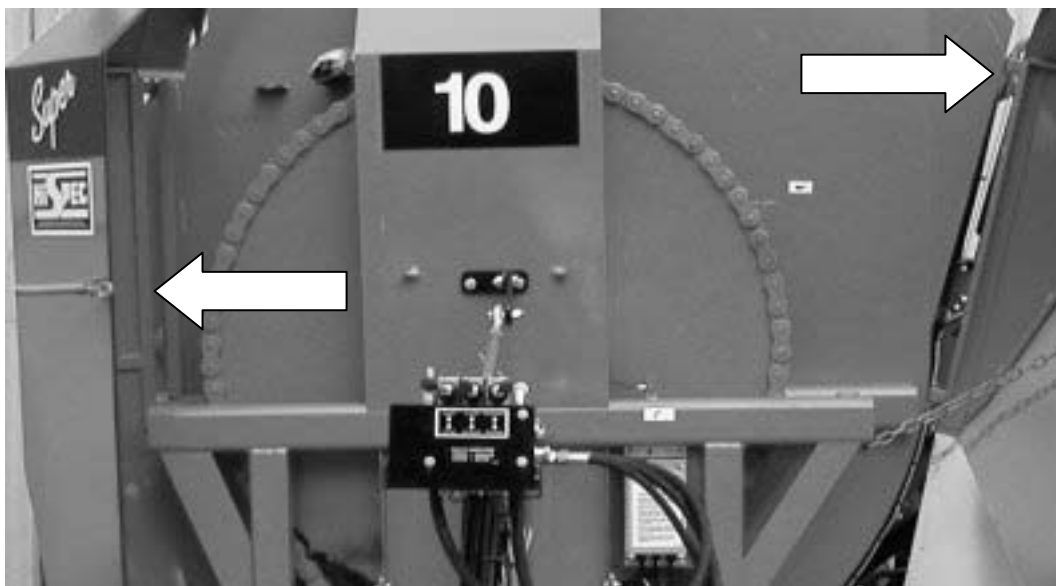
1	Central Greasing Point
---	------------------------



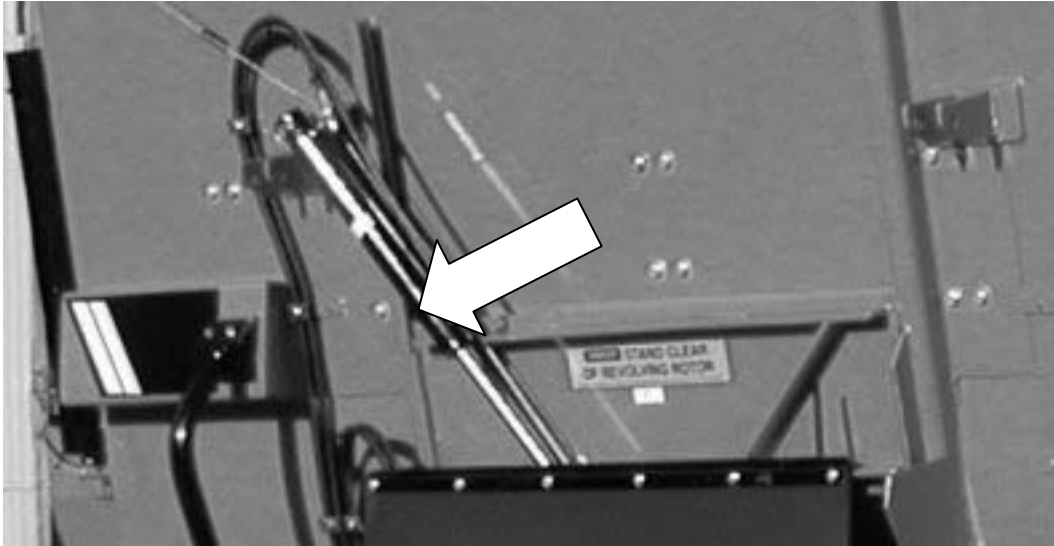
2	Main Drive Chain
---	------------------



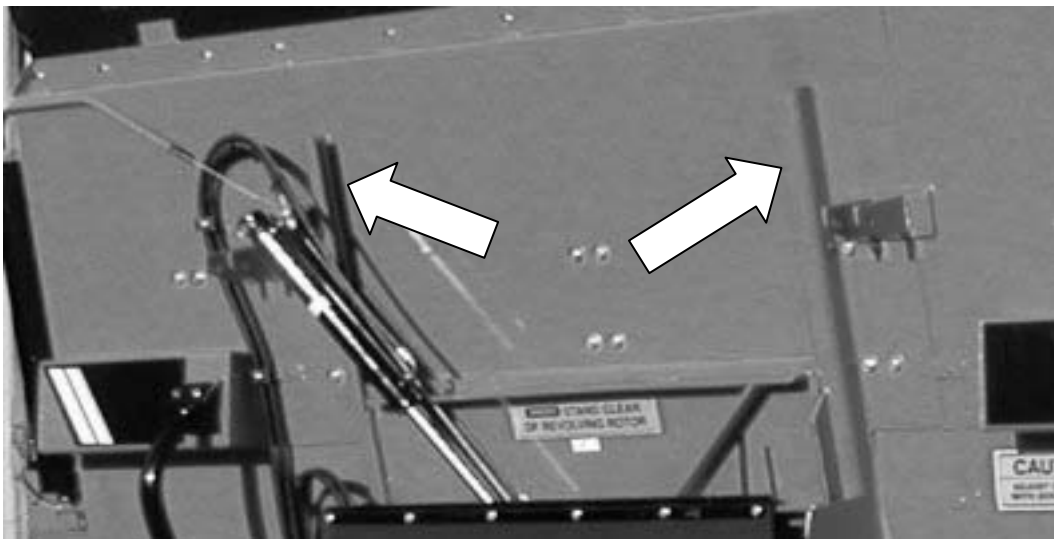
3	Automatic Chain Oiler (optional extra)
---	--



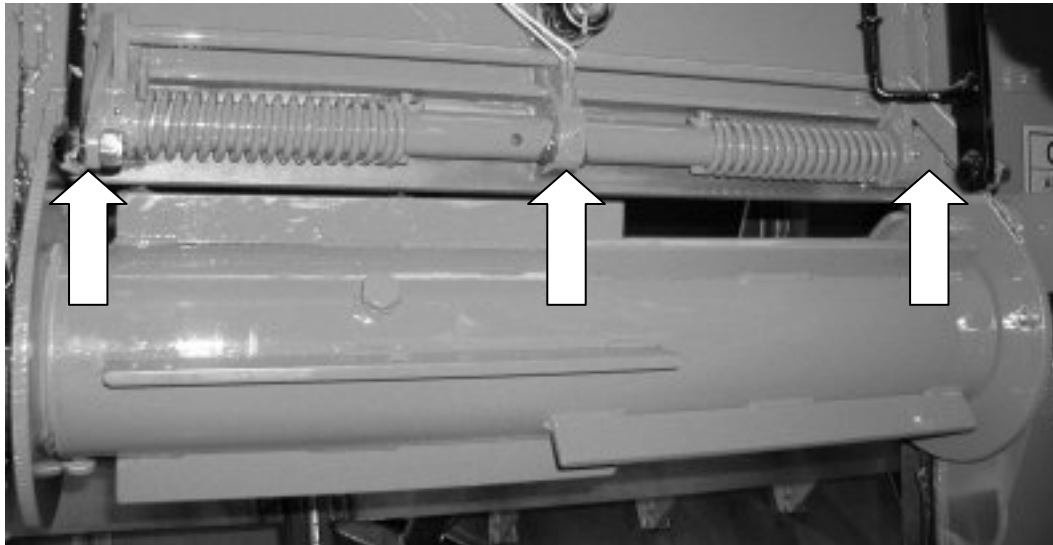
4	Door Hinges and Fasteners
---	---------------------------



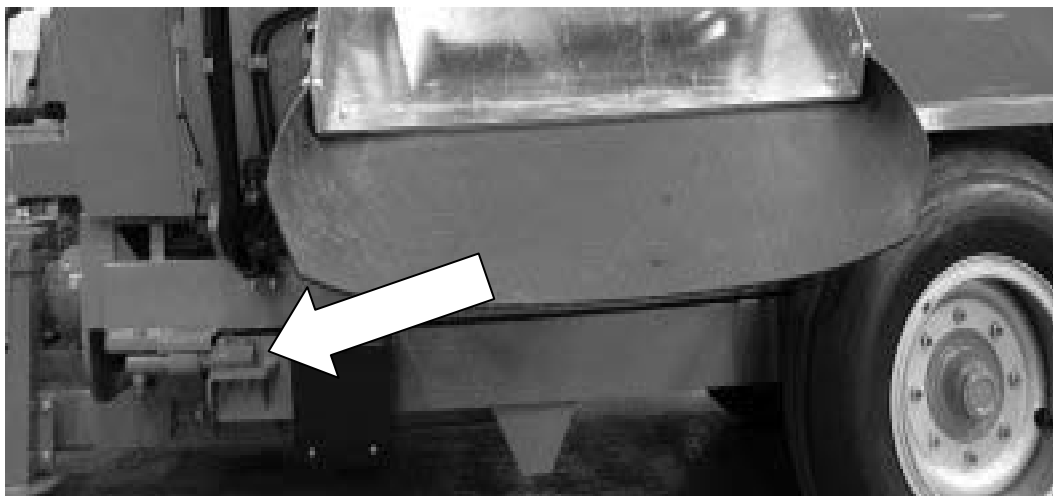
5	Hydraulic Door Ram
---	--------------------



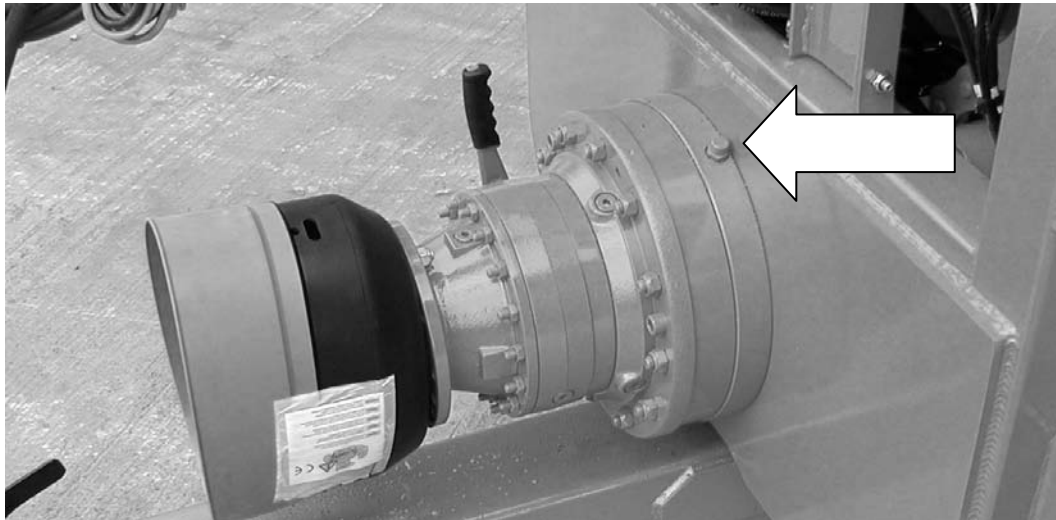
6	Slides for Feed-out Door
---	--------------------------



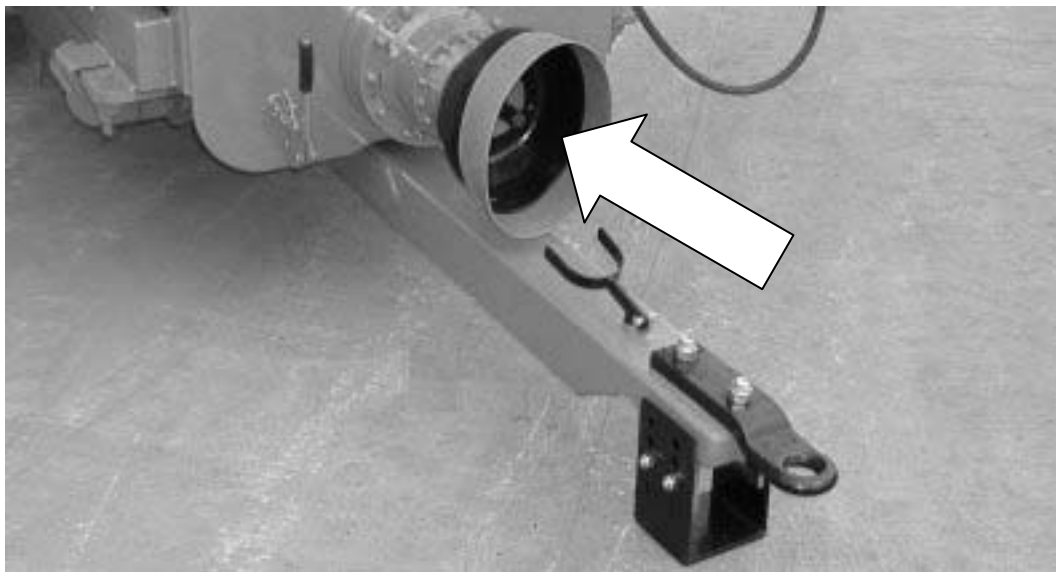
7	Roller Mounting Pivot
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8 + 9	Weighbar Bolts
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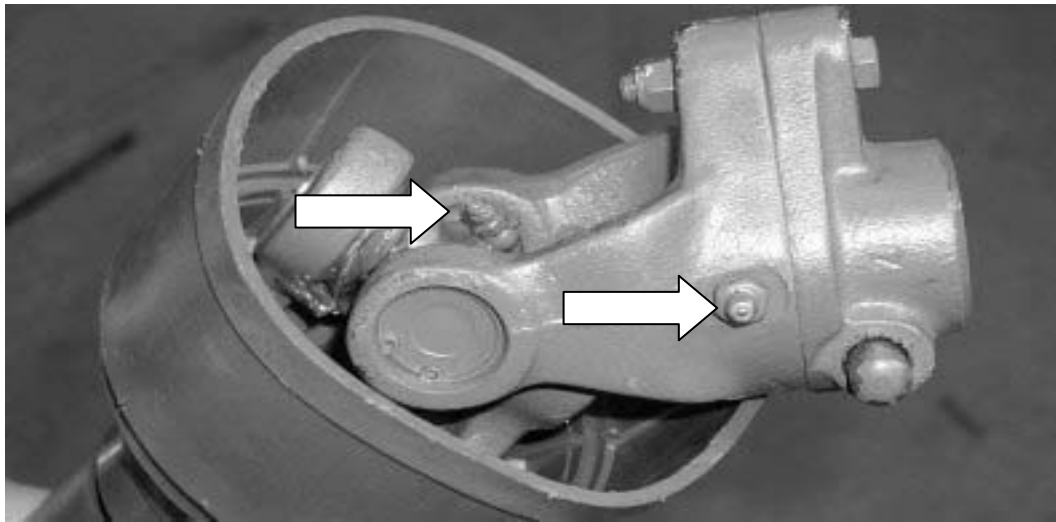


10	Gearbox
----	---------

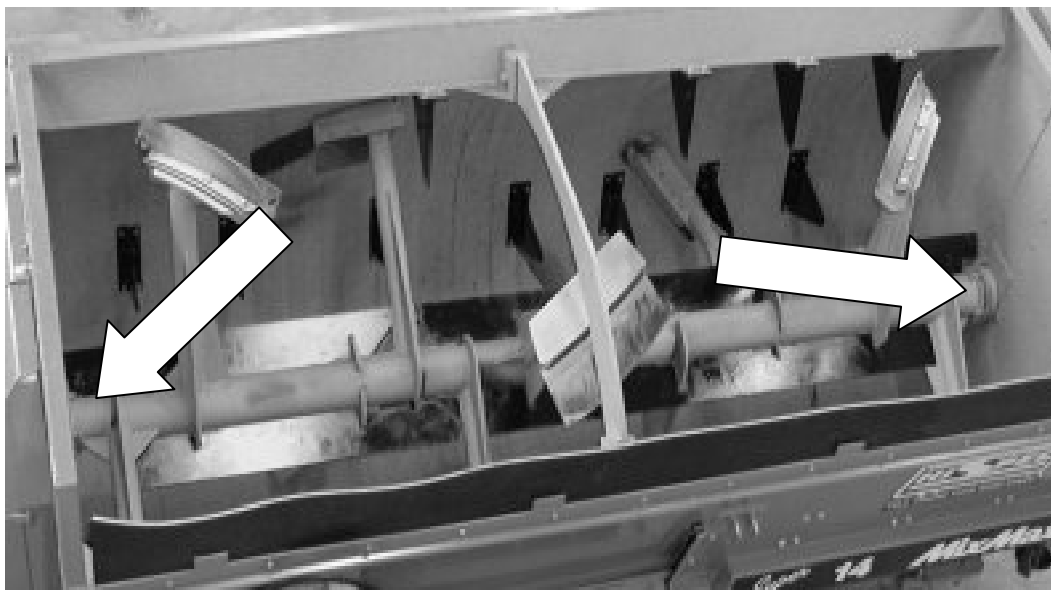


11	Gearbox- PTO Connection
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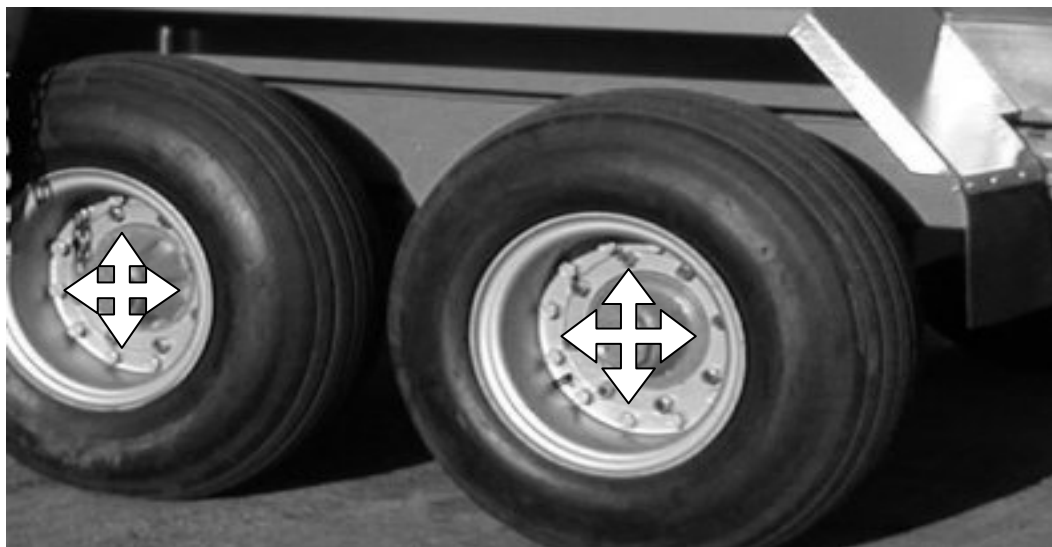
12	Grease Points on PTO Shaft
----	----------------------------



13	Rotor Seals
----	-------------



14	Grease Point at Rear of Machine
----	---------------------------------

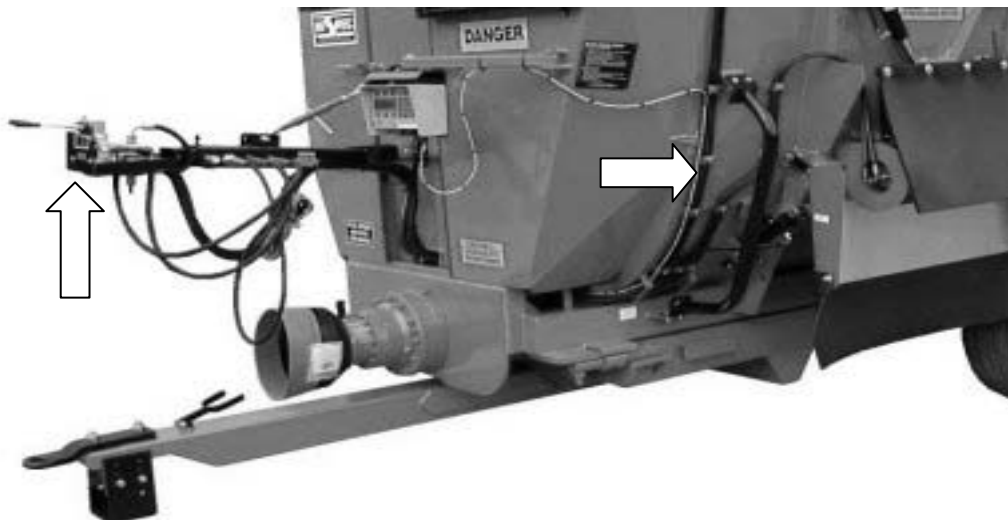


15	Road Wheel Nuts
----	-----------------





16	Hub Cap
----	---------



17	Hydraulic Levers & Pipes
----	--------------------------

## Wheel removal/refitting

Due to the size and weight of trailing agricultural machines special precautions must be adhered to when removing or replacing a tyre and wheel assembly.

**Due to the risks involved, wheel removal MUST only be carried out by skilled trained personnel (i.e. professional tyre fitter).**

It is advised that before any work is carried out;

- If the machine is a hazard on a public road that suitable warning is provided to other road users;
- The machine is emptied and moved to a level area with good solid ground;
- The machine wheels are chocked and it is hitched to a tractor with its parking brake effectively engaged;
- A jacking / lifting / supporting position is chosen to maintain maximum machine stability;
- The load at the jacking / lifting point is known;
- The jacking / lifting equipment has sufficient lift capacity and is adequately maintained for the task;
- Ground conditions at the jacking point can withstand the loading;
- The hydraulics of any Forklift Truck / Telescopic Handler / etc, deployed are not solely relied upon while working in the danger zone;
- An adequately rated axle stand or other prop is positioned following the same safety procedure as for choosing the jacking point;
- There is no possibility of slippage between the safety prop (axle stand or other adequate strength support) and the machine;
- As far as possible those involved in the task stay clear of the danger zone (crush area if the machine were to collapse off its temporary support);
- Where possible, mechanical aids are used to lift / position wheels;
- High visibility clothing is worn where appropriate and where possible the work is carried out away from live traffic;
- Please consult your local Hi-Spec dealer or contact Hi-Spec Engineering Ltd directly if there are any queries.

### Jacking Points

- Jacking points are provided at the rear of the machine as indicated by this symbol.



- Tanker must be empty before jacking
- Jacking and wheel removal must only be carried out by skilled trained personnel (i.e. professional tyre fitter).

## Root Chopper (Optional Extra)

### Designated use of machine

The MixMax Super Chopper is designed for the purpose of chopping root crops that then can be incorporated into a mix in the Diet Feeder. It is a washer/chopper attachment that fits to the back of the Diet Feeder. Once chopped, roots are conveyed into the Diet feeders mixing chamber where they can be blended with the rest of the mix or can be feed as alone.

The MixMax Super Chopper is designed for the above purpose only.

Hi-Spec Engineering will not be held responsible for any loss or damage resulting from machine applications other than those specified above. Any other use the machine may be put to is entirely at the owners/operators risk.

### Operating Instructions

1. Before using your machine, always walk around it, making sure everything is in order.
2. Ensure Tractor is stopped and PTO is disengaged.
3. Open top deflector doors using handle supplied. Do not attempt to open deflector doors whilst standing on the machine always do so from the ground.
4. Attach a water supply to the washer (if equipped) if washing is required.
5. Ensure no large stones or foreign objects have become mixed with in the roots.
6. Load ingredients into the Root Chopper using a powered loader.
7. When you are satisfied everything is as it should be, connect the PTO that is located on the right-hand side of the MixMax diet feeder, secure the PTO guard at both ends using the safety chains provided.
8. Start tractor and engage PTO
9. Add more roots to the root chopper if required.
10. When finished disengage PTO and stop tractor.
11. Disconnect the PTO shaft located on right-hand side of machine and water supply if attached. Close down top deflector doors.
12. When you are satisfied everything is as it should be start tractor and continue mixing a mix as described earlier in this manual (page 18).

## Safety Decals



## Greasing and Maintenance points

### Every 10 hours

- Grease points (2) on PTO shaft, also pull apart, and grease sliding tube.

### Every 50 hours:

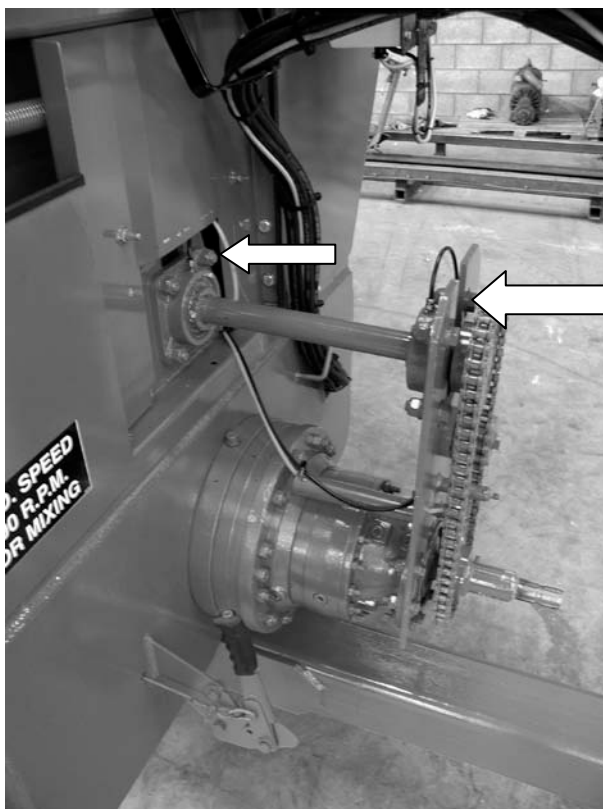
- Oil drive chains on main drive system at front of feeder.
- Oil drive chains on cleaner and mincer drive system located at back of machine

### Every 100 hours:

- Grease points (2) on front power drive shaft.
- Grease points (2) on front half of side power drive.
- Grease points (2) on back half of side power drive.
- Grease points (2) cleaner chain shaft front and back.
- Grease points (2) mincer chain shaft front and back.
- Grease points (1) auger from mincer to mixing chamber
- Check the Drive chains for tension and if required, adjust the tensioners.

(Chains should not be sagging under the load)

Number:	Machine Part
1	Front Power Drive Shaft
2	Front Half of Side Power Drive
3	PTO Shaft
4	Back Half of Side Power Drive
5	Cleaner and Mincer Shafts Front
6	Cleaner, Mincer and Auger Shafts



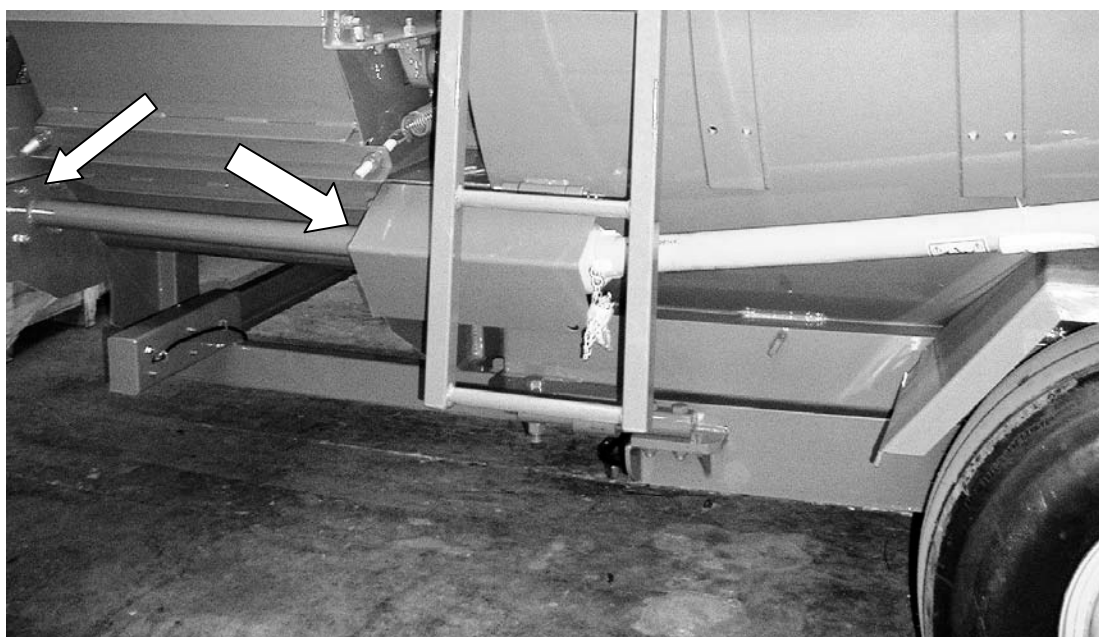
1	Front Power Drive Shaft
---	-------------------------



2	Front Half of Side Power Drive
---	--------------------------------

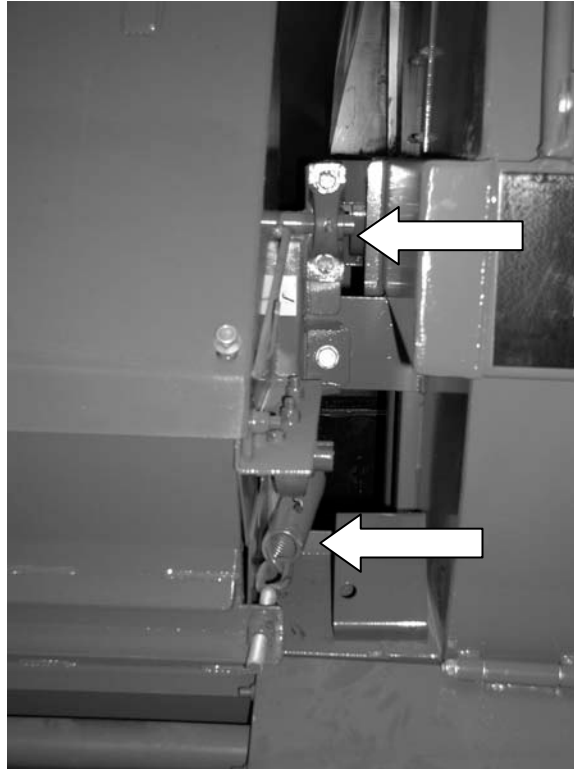


3	PTO Shaft grease points
---	-------------------------

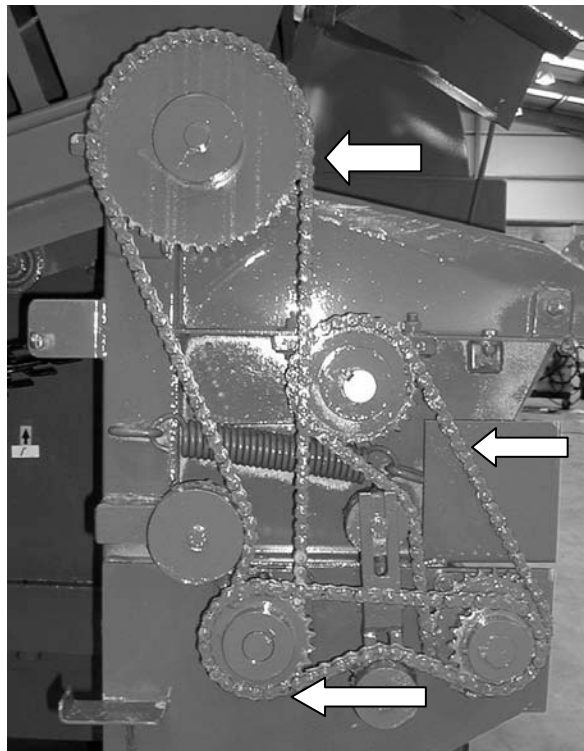


4	Back Half of Side Power Drive
---	-------------------------------





5	Cleaner and Mincer Shafts Front
---	---------------------------------



6	Cleaner, Mincer and Auger Shafts
---	----------------------------------



## Sales and Service

### Ireland

#### Head office

Hi-Spec Engineering Ltd., Station Rd, Bagenalstown, Co. Carlow, Ireland

Tel: - +353 59 9721929 Fax: - +353 59 9721980

Email: - [sales@hispec.net](mailto:sales@hispec.net) or [info@hispec.net](mailto:info@hispec.net)

#### After Sales Service

Contact: - Brian McArdle, Hi-Spec Engineering Ltd. Tel: - +353 87 2562963

Email: - [Brian@hispec.net](mailto:Brian@hispec.net)

#### Machine Servicing

Contact: - Michael Brennan, Hi-Spec Engineering Ltd. Tel: - +353 87 2403312

#### Spare Parts Store

Contact: Mike Nolan or Terence Byrne, Hi-Spec Engineering Ltd.

Tel: - +353 59 9721929 Fax: - +353 59 9721980

Email: - [stores@hispec.net](mailto:stores@hispec.net)

### U.K.

#### After Sales service:

##### Wales, Midlands & South West England

Contact: - George Reed, Hi-Spec Engineering Ltd. Tel: - +44 7802 652139

Email: [georgereed@hispec.net](mailto:georgereed@hispec.net)

##### East & South East England

Contact: - John Molton, Hi-Spec Engineering Ltd. Tel: - +44 7825 330887

Email: - [john@hispec.net](mailto:john@hispec.net)

##### Northern England & Scotland

Contact: - Paul McUrick, Hi-Spec Engineering Ltd. Tel: - +44 7810 040100

Email: - [paul@hispec.net](mailto:paul@hispec.net)

#### For spare parts

Contact: - Your local Hi-Spec dealer. If you require a contact name and number you can telephone head office and we would be glad to assist you.

# Warranty

The following is a list of warranty terms. Warranty claims will be disallowed if they do not fall into the categories shown here.

## Warranty Terms

1 Year Warranty on Drive System, Bearings and Elevator Chain.

2 Years Warranty on Weighing System

## NO Warranty on the following:

- ⌚ PTO Shafts
- ⌚ Hydraulic fittings
- ⌚ Hydraulic hoses
- ⌚ Electrical connections between machine and tractor

## NO Warranty allowed for breakdowns due to:

- ⌚ Misuse of the machine, e.g. overloading by the operator
- ⌚ Lack of maintenance, e.g. failure to carry out regular oiling and greasing of components and bearings where appropriate

## Rootchopper Warranty:

- ⌚ 1 year parts warranty

# Conditions of Sale

## General

In these conditions the word "Company" means Hi-Spec Engineering Limited. The word "dealer" means a customer of Hi-Spec Engineering Ltd. Purchasing machines from them for resale at recommended retail prices and the word "first user" means the first person to whom the dealer sells any goods for actual use. The company's employees may negotiate orders and issue quotations but an order is only binding on a company when it has acknowledged the order in writing on the company's official acknowledgement forms.

Such acknowledgement and confirmation will only be given subject to these conditions of sale. The acceptance of delivery of the goods either at the dealer's premises or those of the first user if delivered direct to the first user shall bind the dealer and the dealer shall only sell to the first user on conditions which incorporate the company's warranty. If he fails to sell the dealer shall have no claim whatsoever against the company except insofar as the company will honour the warranty to the dealer and through him to the first user. The term goods where used means such articles as are invoiced by the company whether manufactured, imported, distributed or otherwise sold by them.

## Delivery

Should the company be prevented from delivering any goods owing to any lockout, strike, weather conditions, or other exceptional causes occurring either at their own premises, or elsewhere, then delivery shall be postponed until a reasonable time after the occurrence has ceased to cause delay, unless the parties shall mutually agree to the cancellation of the contract in respect of such goods.

## Cancellation of Orders

The only ground for acceptance of a cancellation of an order shall be the non acceptance of these terms and conditions by the dealer and then only if

Within seven days of receiving notification of the terms and conditions the dealer notifies the company in writing of its non-acceptance.

The dealer pays the company any losses suffered including any carriage charges if these have been incurred.

## Delays

While every effort has been made to adhere to delivery dates or times quoted by the company, such dates or times given though given in good faith are mere estimates only. The company accepts no responsibility for delay in delivery or for the consequences of such delay however caused nor shall the dealer be entitled to reject goods thereof by reason.

**Design**

No responsibility is accepted for any deviation from drawings or from illustrations in catalogues, price lists, brochures or advertising material for discrepancies in weight, rated outputs. Performance from those mentioned here in which shall be treated as illustrative and approximate only.

**Price**

Any fluctuation in prices arising after the contract but before dispatch shall entail adjustment in the contract price and the price to be paid shall be fixed at the date of dispatch.

**Damage, Shortage or Loss**

The company do not accept any responsibility for any damage, shortage or loss in transit when goods are dispatched to instructions and where the transit is affected through a third party and not by the Company itself.

**Conditions of Resale**

The dealer shall only re-sell any of the company's products with the full and unaltered warranty that is issued with every machine invoiced by the company. If the dealer either through negligence or for any other cause fails to get the agreement of the first user to accept this warranty the dealer shall have no other recourse against the company except that contained in these conditions of sale and he dealer expressly agrees that in accepting delivery he has recourse in law against the company nor will he join the company as third or other party in any action which results against him from the resale of the company's products.

**Warranty**

The Company warrants its products through the dealer and through the dealer to the first user. The dealer shall only re-sell the company's machines with the benefit of the company's warrants. The said warranty is as follows:

The company warrants, subject as hereinafter provided, that all new goods supplied by it shall be free from defects in material and workmanship, its liability under such warranty being limited to making good at a factory to be nominated by it, such parts or parts which shall within twelve calendar months from the date which the product was delivered new to the retail purchaser be returned to the company or its authorised representative which the company is satisfied on its examination of the part or parts to have been defective in material or workmanship provided that. All replaced parts shall become the property of the company.

The foregoing warranty does not extend to any product which shall have been repaired, altered, neglected or used in any way so as, in the judgement of the company (whose decision is final) may have adversely affected its stability or reliability, nor does this warranty apply to proprietary articles, accessories or parts not manufactured by the company but where any such warranty is given by the manufacturers of such articles, accessories or parts any benefits under such warranty will be passed on by the company.

The company will not be responsible for damage or loss caused by incorrect machine settings, ground speed or operation of the machine in unsuitable conditions and the company's decision as to the suitability of the condition shall be final. Fair wear and tear is excluded from any claim and no responsibility whatsoever is accepted for damage, which in the company's Opinion is caused by hazards of soil, stones or foreign objects.

The warranty is transferable to a second or subsequent owner (within the warranty period) subject to the company being notified in writing of this change of ownership.

Complaints referring to faulty or incomplete deliveries or to obvious faults must be notified to the dealer in writing within fourteen days after receipt of goods. In the absence of such notification delivery shall be considered as having been accepted as in good order and condition.

The company does not give any warranty in respect of its goods except therefore going Warranty which is given expressly in lieu of and excludes all other warranties and conditions expressed or implied whether under common law, Statute or otherwise and every form of liability for loss or damage direct or consequential or for any accidents resulting from defective material faulty workmanship or otherwise, is expressly excluded.

### **Liability**

In no circumstances whatsoever shall the Company's liability (in contract, tort or otherwise) to a buyer under, out of or in connection with this contract or the goods supplied exceed the invoice price of the particular goods in regard to which component is made.

### **Title of the Goods**

The title in the goods shall not pass to the customer until the customer shall have discharged all sums due by the customer to the company at the date of the final handing over of the possessions of goods

### **Interest**

If the customer shall fail to pay any sum due in foot of this transaction within fourteen days after the same shall become due, the customer shall pay interest thereon calculated from the due date of payment at the annual rate equal to 4% over the prime rate charged from time to time by the associated banks on secured loans to individual customers.



## Registration Forms



Hi-Spec Engineering Ltd.  
Station Rd., Bagenalstown,  
Co. Carlow, Ireland  
**Tel: - 059 9721929**  
**Fax: - 059 9721980**

Please complete the following forms in full.

The first is a warranty registration form; this form is issued in accordance with our conditions of sale and with particular reference to the condition governing warranty. We cannot process a claim unless all particulars are supplied.

The second is an acceptance form, which the purchaser is asked to sign to acknowledge he/she has received a copy of the Operator manual and full training for the machine purchased.

Please do not sign if you have not received both of these.

### **Warranty Registration**

Date of Purchase: \_\_\_\_\_  
Purchaser's Name: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Dealer's Name: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Machine Type: \_\_\_\_\_  
Machine Model: \_\_\_\_\_  
Serial Number: \_\_\_\_\_

### **Training & Operator Manual Registration**

Please sign the following declaration to state that on the day you (the purchaser) purchased a Hi-Spec Mixmax Diet Feeder you received an operator manual and training instructions.

I the purchaser have received my Hi-Spec Mixmax Diet Feeder Operator Manual and training from the below dealer.

Purchaser: _____	Signature: _____
Date: _____	
Dealer: _____	Signature: _____
Date: _____	

*This copy is to be kept in your manual for your reference.*





## Registration Forms



Hi-Spec Engineering Ltd.  
Station Rd., Bagenalstown,  
Co. Carlow, Ireland  
**Tel: - 059 9721929**  
**Fax: - 059 9721980**

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Address: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Dealer's Name: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Address: \_\_\_\_\_  
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Machine Type: \_\_\_\_\_  
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I the purchaser have received my Hi-Spec Mixmax Diet Feeder Operator Manual and training from the below dealer.

Purchaser: _____	Signature: _____
Date: _____	
Dealer: _____	Signature: _____
Date: _____	

*This copy is to be posted to Hi-Spec Engineering or given to your dealer*



# Declaration of Conformity

## EC Machinery Directive

2006/42/EC

We hereby certify that the machinery stipulated below complies with all relevant provisions of the EC Machinery Directive and the National Laws and Regulations adopting this Directive.

Modifications to the machine without prior approval from the undersigned will render this declaration null and void.

Machine Description and Function:	<b>MixMax Diet Feeder designed to mix and dispense feed</b>
Make:	<b>Hi-Spec</b>
Model:	<b>mm10, mm14, mm16, mm18, mm24</b>
Serial Number:	
Manufacturer:	<b>Hi-Spec Engineering Ltd.</b>
Address:	<b>Station Rd, Bagenalstown, Co. Carlow, Ireland</b>

Technical file compiled by: Derek Whelan, Myshall, Co. Carlow

Harmonised standards applied:

EN ISO 12100-1:2003, Safety of machinery Part 1: Basic terminology, methodology

EN ISO 12100-2:2003, Safety of machinery Part 2: Technical principles

EN ISO 4254-1:2005, Agricultural machinery -- Safety -- Part 1: General requirements

EN ISO 14121-1:2007, Safety of Machinery – Principle of Risk Assessment

Signed: \_\_\_\_\_

Date: **6<sup>th</sup> April 2010**

Name: **Mike Nolan**

Position: **Managing Director**

Being the responsible person appointed by the manufacturer.

Hi-Spec Engineering reserve the right to make changes and improvements at any time without incurring any obligation to make such changes on products previously sold.

# Declaration of Conformity

## EC Machinery Directive

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We hereby certify that the machinery stipulated below complies with all relevant provisions of the EC Machinery Directive and the National Laws and Regulations adopting this Directive.

Modifications to the machine without prior approval from the undersigned will render this declaration null and void.

Machine Description and Function:	<b>MixMax Root Chopper designed to chop and clean small root crops</b>
Make:	<b>Hi-Spec</b>
Model:	<b>Root Chopper</b>
Serial Number:	
Manufacturer:	<b>Hi-Spec Engineering Ltd.</b>
Address:	<b>Station Rd, Bagenalstown, Co. Carlow, Ireland</b>

Technical file compiled by: Derek Whelan, Myshall, Co. Carlow

Harmonised standards applied:

EN ISO 12100-1:2003, Safety of machinery Part 1: Basic terminology, methodology

EN ISO 12100-2:2003, Safety of machinery Part 2: Technical principles

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Signed: \_\_\_\_\_

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Name: **Mike Nolan**

Position: **Managing Director**

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## Notes